



Driving Digital Transformation in Healthcare: Lessons from Digital Leaders

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Executive Summary

In 2019, IDC completed a global research study, sponsored by NetApp, to understand the characteristics of the most-mature healthcare organizations in the way they manage data and digital technologies, and to draw lessons about how other organizations can expand their use of digital technologies to enhance patient and business outcomes.

Organizations were characterized into one of five categories, from most (stage 5) to least (stage 1) mature:

5. Data Thrivers
4. Data Synergizers
3. Data Responders
2. Data Survivors
1. Data Resisters

We found that the level of digital maturity reported had, not surprisingly, increased since our previous survey sponsored by NetApp in 2017.

Successful digital transformation (DX) relies on intelligent use of data, and the most sophisticated healthcare organizations are already using it to transform their operations. They are finding new ways to use data to better patient outcomes, ease the burden on their staff, and more effectively get treatments to market.

Healthcare Data Thrivers are making the switch from being data-rich to data-driven. They:

- Leverage data in their core technologies to make more effective healthcare decisions.
- Have better patient outcomes and employee retention than other organizations and are more likely to use data to personalize healthcare, improve patient outcomes, and reduce patient/member leakage patterns.
- Migrate data to the cloud and use more SaaS applications than their peers.
- Look to hybrid cloud to provide greater end-to-end control over their environments.
- Are at the forefront of using artificial intelligence and deep learning to identify medication/treatment pathways and improve patient outcomes.

The Shift from Data-Rich to Data-Driven

Digital technologies are transforming healthcare.

From providers using digital information to improve patient care to medical device manufacturers embedding intelligence to extend a device's operating life and reduce costs, the industry is on the verge of radically reshaping how healthcare is delivered, measured, and managed.

Mature organizations are shifting from being merely data-rich to being data-driven, putting data to use enhancing critical patient care and operational decisions. For example, the next generation of electronic health records (EHR 2.0) embeds functionality and capabilities to improve value-based care workflows, optimize data capture to maximize reimbursements, and deliver superior patient and clinician experiences.

This shift requires data that is secure, clean, high quality, and available in real time. Unlike the first EHRs, which were relatively closed, the next generation requires more system openness and platforms that leverage common interoperability standards and protocols like open APIs and HL7 FHIR.

Healthcare organizations at any stage in their data journey can look to Data Thrivers and implement similar practices as their transformations progress.

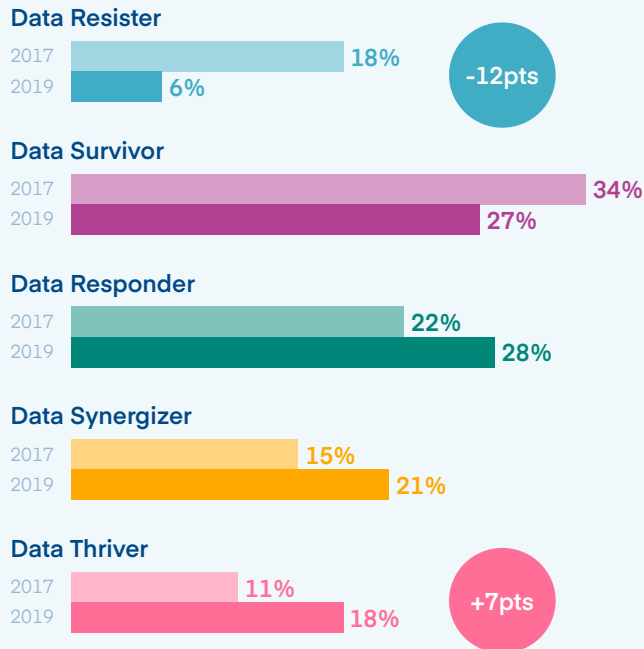
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The systems are starting to pop out health maintenance reminders... Not only does the patient need to get a colonoscopy, but we see from their family history they have listed out diabetes, so let's go ahead and run their full bloodwork.”

CIO Private Healthcare Provider

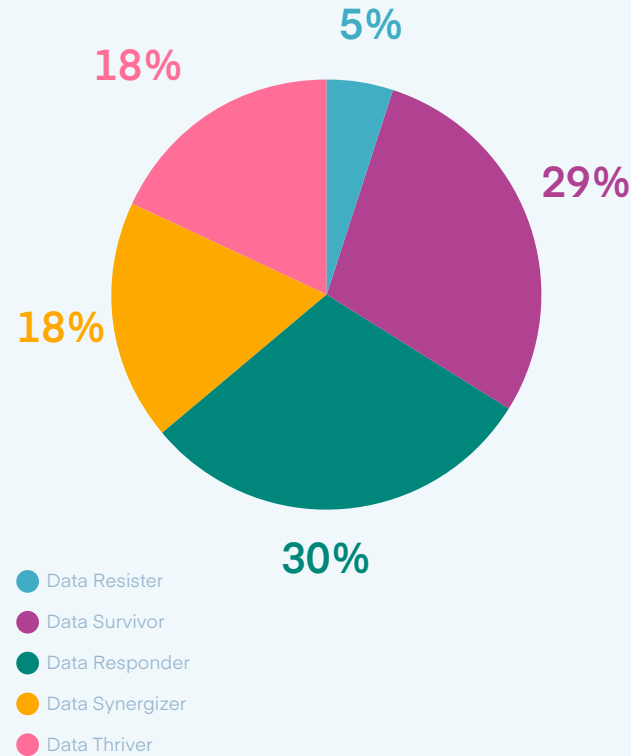
DX Maturity Is Increasing in Healthcare

DX Maturity Self-Assessment (All Industries)



Across all industries, respondents' DX self-assessment improved significantly from the previous survey. **Data Thrivers** experienced the highest growth rate since the 2017 study, rising from 11% to 18%, while **Data Resisters** dropped from 18% to 6%.

DX Maturity Self-Assessment (Healthcare)



In this year's study, the maturity mix for healthcare companies tracked very closely to the total sample.

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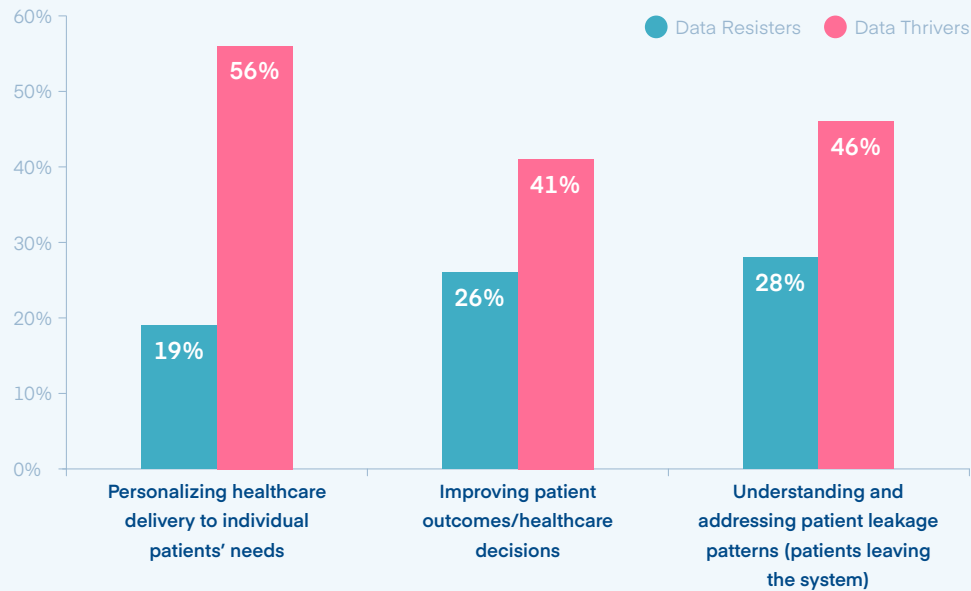
We want to be one step — or as many as possible — ahead of our competition... We want to use data as a competitive advantage.”

Senior Manager, Data Platforms,
Pharmaceutical Provider

Healthcare Thrivers' DX Objectives:

Humanizing the Experience and Improving Patient Care

DX Use Cases (Healthcare)



The top DX use cases for healthcare companies are security, personalizing care, physician performance management, and improving patient outcomes. However, **Data Thrivers** stand out most from **Data Resisters** in personalizing healthcare, improving patient outcomes, and addressing patient leakage patterns.

Payer and provider efforts to humanize the experience recognize that members and patients have many touch points in addition to the point of care. Focusing on the end-to-end member/patient experience, these organizations are also building initiatives around engagement, payment, and referral management.

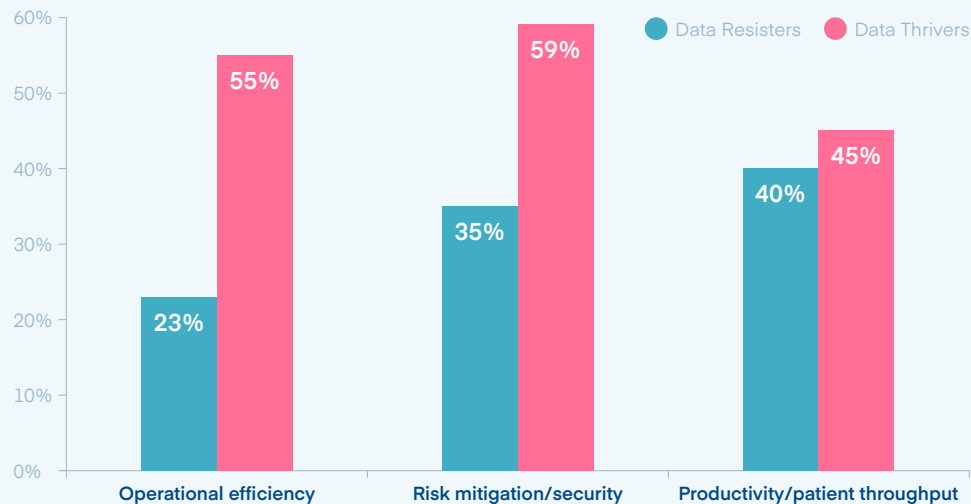
“

We're under excruciating pressure to measure patient experience. A lot of our thinking is about what we are doing to improve that.”

CIO, University Health System

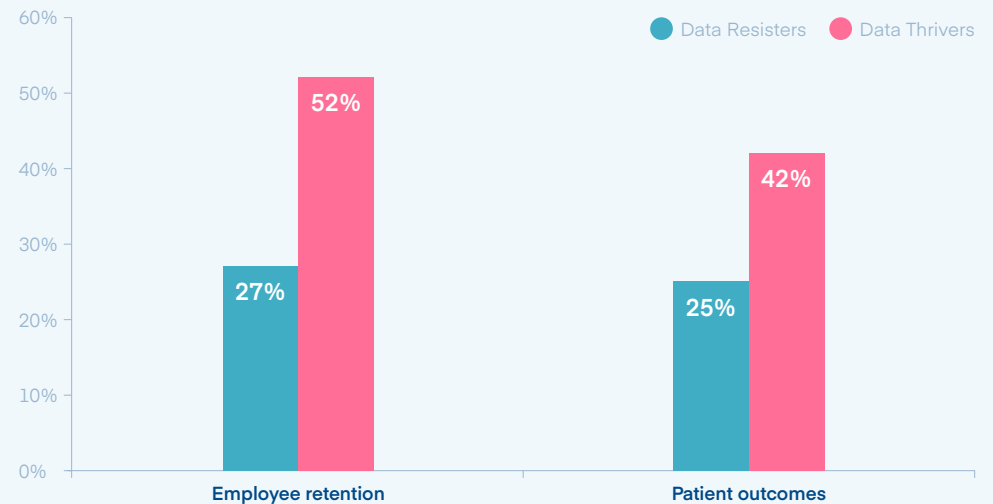
Healthcare Thrivers' Performance Metrics Include Operational Efficiency, Risk Mitigation, and Productivity

Business Priorities



While the top business priorities of healthcare providers *in general* are operational efficiency (cited by 47% of respondents) and revenue/profitability (cited by 43%), **Data Thrivers are more focused on risk mitigation/security and productivity/patient outcomes.**

Self-Reported Business Outcome Improvement, Past 3 Years

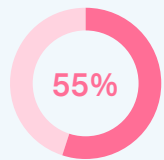


Data Thrivers report having the best patient outcomes and employee retention. Having the right technologies helps Thrivers improve their current competitive positions and future-readiness as well as contribute to the goals of improving quality, experience, and engagement.

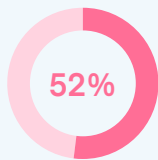
Healthcare Thrivers' Top Data Challenges Are Compliance, Data Quality, and Real-Time Analysis

Data Challenges (Healthcare)

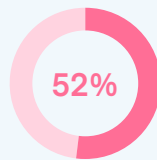
Data Thrivers



Maintaining regulatory compliance

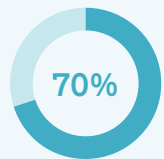


Data quality and cleanliness

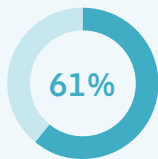


Ability to analyze data in real time

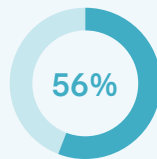
Data Resisters



Cost: knowing how much data costs to retain



Data lock-in to a specific format, location, or infrastructure

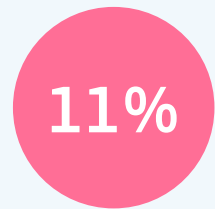


Ability to analyze data in real time

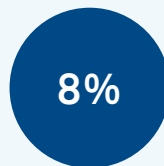
Data Thrivers are most focused on compliance, quality, and real-time data issues. In contrast, **Data Resisters** are hung up on costs and struggle with data lock-in. Like Thrivers, they have trouble analyzing data in real time.

The push for better compliance and quality reflects that Thrivers understand the value of analyzing data in real time to improve care. Knowing they can reap the benefits of meeting compliance and quality requirements for incentive programs helps them to realize rewards and offset risk.

Healthcare Thrivers Migrate Data to the Public Cloud



VS



Healthcare Data Thrivers have 11% of their data in SaaS environments, compared to 8% for all healthcare organizations.

Healthcare organizations are beginning to embrace cloud as the industry overall is experiencing the benefits realized by forward-thinking organizations. Apprehension about moving workloads

to the cloud has declined, and Data Thrivers are expanding their use of SaaS. This survey identified security, agility, and increased staff productivity as top drivers of cloud adoption.



VS



Healthcare Data Thrivers have 47 SaaS applications on average, compared to 36 for all healthcare organizations.

“

I have 13 datacenters, but that's not our business, so we are trying to eliminate datacenters. I do not want to build more infrastructure, and SaaS makes it faster and easier to deliver new applications.”

CIO, Private Healthcare System

Healthcare Thrivers Also Look to Hybrid and Private Cloud

69%

of Healthcare Thrivers believe it's important to combine on-premises and public cloud locations to provide a hybrid cloud experience.

62%

of healthcare organizations say the amount of data in their private or hosted private cloud environments will increase over the next two years.

“

We have on-premises applications where the data from the source system lives, but then we take the data and put it into Azure for our analytics purposes. So now it's in both places.”

Director of IT, Private Children's Hospital

Healthcare Thrivers look to hybrid cloud to provide:

56%

End-to-end control over IT environment, including infrastructure, applications, and data

56%

A single combined data plane and accompanying data mobility/migration capabilities

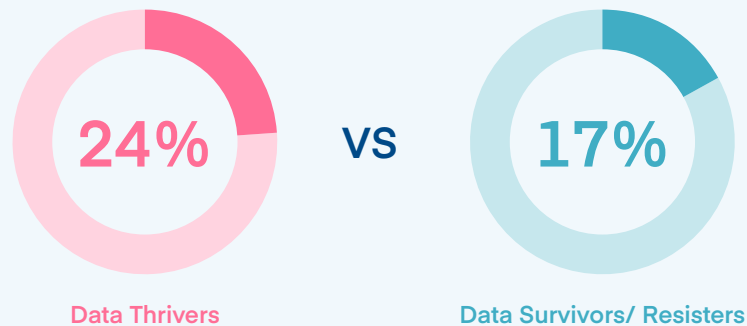
48%

A single combined compute plane and accompanying workload migration ability

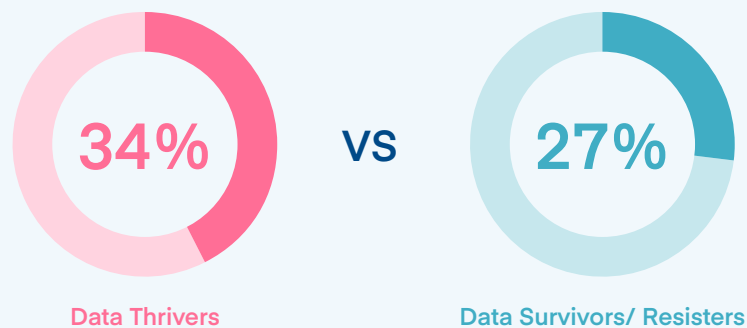
Healthcare organizations increasingly run complex, multi-cloud environments, and they use cloud to complement and supplement their in-house IT infrastructure, with Thrivers leading the charge. Organizations must continue to invest in the skills, resources, and technologies to help make this transition.

Healthcare Thrivers Use Artificial Intelligence and Deep Learning to Improve Patient Outcomes

Using artificial intelligence (AI)
in customer-facing production workloads



Using deep learning (DL)
in customer-facing production workloads



Top uses of AI, ML, and DL in healthcare are to identify appropriate medication/treatment pathways, perform screening and risk stratification, and improve patient experience and outcomes. These technologies have immediate application in medical imaging, patient triage, reporting, and improving productivity and staff efficiency, thus increasing time to focus on patient care. While AI is paving the way for more intelligent, data-driven processes, it is challenged to an extent by regulation and validation.

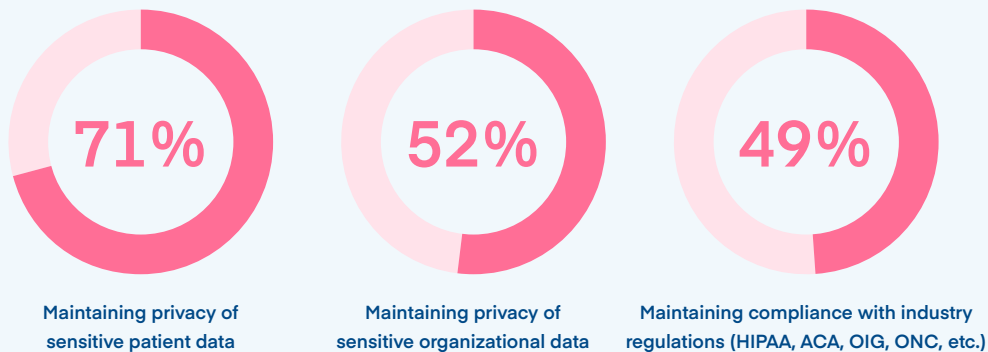
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In transplants, we use AI to try to predict whether the patient will survive and whether they are a good candidate for a transplant.”

CIO, University Health System

Challenges and Strategies for Data Privacy, Security, and Compliance

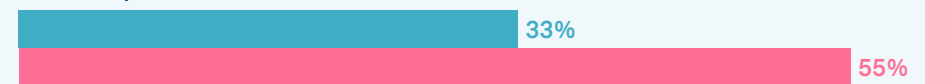
Healthcare Thrivers' Data Privacy, Security, and Compliance Drivers



Patient data protection and privacy is the top data driver for Healthcare Thrivers, followed by maintaining privacy of organizational data and maintaining regulatory compliance. Patient records include sensitive data, and pose an attractive target as their black market value can be hundreds or thousands of dollars. This is much more than any other source of data, including credit card and social security numbers, making healthcare organizations a prime target.

Data Privacy, Security, and Compliance Challenges

Different product for different data formats (structured, unstructured, semi-structured)



Uptime/reliability issues



Solution pricing too high



Solution pricing not subscription/consumption based

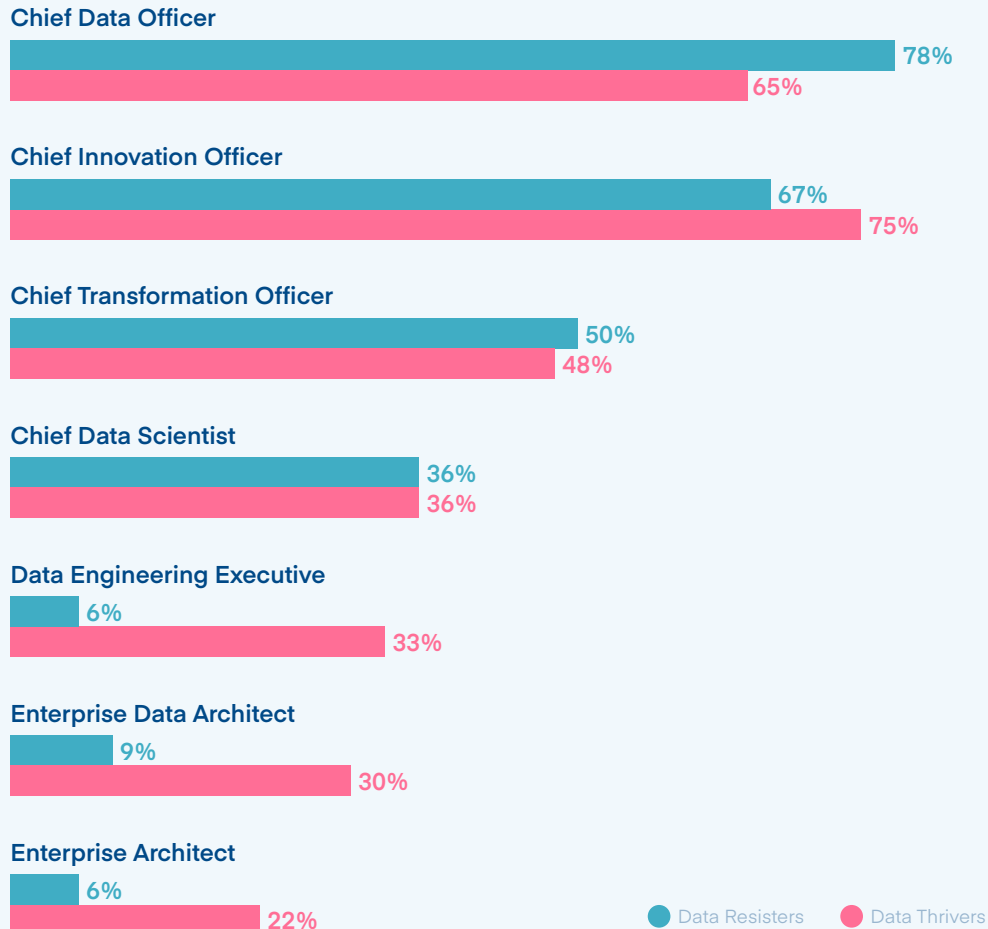


● Data Resisters ● Data Thrivers

Healthcare Thrivers are more likely to be concerned with technology heterogeneity and provider uptime. And while they want subscription/consumption-based pricing, they are least likely to focus on the specific price point. **Thrivers** recognize the value data brings and don't necessarily pursue the lowest possible solution price.

Data Roles and Ownership in Healthcare

Roles in the Organization



Healthcare Data Thrivers and **Data Resisters** are likely to have Chief Data Officer and Chief Innovation Officer roles; about a third of each have a Chief Data Scientist. Both groups also identify the role of Chief Transformation Officer as having significant influence on data strategy and policy.

However, what makes **Thrivers** stand out is their use of Data Engineers, Enterprise Data Architects, and Enterprise Architects.

Conclusion:

Using Data Improves Patient and Business Outcomes

For healthcare organizations, the shift from being merely data-rich to becoming data-driven relies on unlocking the value of data and turning it into actionable insights. A closed-loop process maximizes the usefulness of data in decision making, both at the level of the entire organization and the individual patient. The move to next-generation EHRs (EHR 2.0) is a great example of this. Leveraging data is part of the new digital era, where technologies like cloud, AI, ML, and DL are helping organizations transform the way they provide care and do business while maintaining privacy, security, and regulatory compliance.

Successful healthcare organizations are already acting upon this trend, and are at the forefront of identifying ways to leverage digital solutions to streamline operations and improve patients' outcomes. But as impressive as the improvements are, most healthcare organizations are only beginning to realize the benefits that digitization promises for their business.

It's a brave new world, and we are only at the first step.

Appendix:

Study Methodology

The findings in this study were developed in part on a series of focus groups IDC conducted in January 2019 with information technology and data executives in healthcare, manufacturing, and financial services. The healthcare and manufacturing groups were conducted in Chicago while the financial services group was held in New York.

These groups were followed by a global survey of 900 information technology and data executives in the U.S., U.K., Germany, France, China, Japan, and Australia. Typical respondent titles include CIO, VP of Data Management, Chief Data Scientist, and Data Architect. Of the total survey sample, 300 completes came from healthcare providers, payers, and life sciences companies. **The data provided in this InfoBrief come from those 300 completes.** The global study was conducted in April/May 2019.

Additional Resources

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Learn how you can accelerate your journey to digital transformation.



Demystify Digital Transformation –
Watch the On-Demand Webinar



Build a Data-Driven Culture –
Get Executive Insights from IDC,
The Wall Street Journal, and
NetApp



Data Expertise for Healthcare –
Streamline data management with
comprehensive solutions from
NetApp

